WHAT IS CLAIMED IS:

1. In a network having a plurality of node elements and data paths between said node elements, said paths having at least one identifying characteristic, a method of distributing data among said paths to make best use of said at least one identifying characteristic comprising:

    determining a maximum single commodity flow for each of said paths;

    determining a number of sample points between said single commodity flow necessary to satisfy at least one imposed constraint;

    determining a value of commodity flow at each of said sample points; and

    assigning commodity flow to each of said paths in proportion to said at least one identifying characteristic.

2. The method as recited in claim 1 wherein the step of determining said single commodity flow is performing using a linear programming technique.

3. The method as recited in claim 1 wherein the step of determining values of said sample points is performed using an iterative process.

4. The method as recited in claim 1 wherein the step of constructing surfaces through said sample point valves includes using polynomials of order greater than one.

5. The method as recited in claim 4 wherein said polynomial surfaces are generated by spline functions wherein the second-derivative of said spline functions are equal at a point of contact.

6. The method as recited in Claim 1 wherein said at least one identifying characteristic is price.

7. The method as recited in Claim 1 wherein said at least one identifying characteristic is commodity flow.

8. The method as recited in Claim 1 wherein the step of determining number of sample points is limited to a known region.

9. A method for rapid data flow allocation in a point to point network where the parameters **p**(t) influencing data flow allocation are changeable, said network having data paths and plurality of node elements;

acquiring network information including node location, length and available paths;

computing sample points of the maximum revenue flows for some interested and fixed parameters;

construction of the approximate maximum-flow-frontier (MFF) utilizing the computed sample points; and

obtaining the updated market parameter vector **p**(t) as a function of time (t), and applying piece-wise linear approximation to construct an updated approximate MFF from parameter vector **p**(t).

10. The method recited in claim 9 wherein the step of computing sample points is done off-line utilizing linear programming techniques.

11. The method recited in claim 9 wherein the step of constructing the maximum MFF is done off-line utilizing linear programming techniques.

12. The method recited in claim 9 wherein said parameter **p**(t) is price.

13. The method recited in claim 9 further including the step of tracking the maximum value of parameter **p**(t) as it varies with time through the reconstruction of the approximate MFF.

14. The method recited in claim 9 wherein the step of constructing utilizes polynomials of order greater than one.

15. The method recited in claim 9 wherein the applying step involves adjusting and reallocating flows while the parameter vector **p**(t) changes such that the actual MFF is realized.

16. The method recited in claim 15 wherein the flow is adjusted to the point on the AMFF which is perpendicular to the parameter **p**(t) vector.

17. The method recited in claim 9 further including a step of checking for network expansion which restarts the process at the acquiring step.

18. The method recited in claim 9 further including a step of checking for reconfiguration needs within the network which restarts the process at the acquiring step.